CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 78-73

NPDES NO. CA0028398

WASTE DISCHARGE REQUIREMENTS FOR:

U. S. DEPARTMENT OF ENERGY
STANFORD LINEAR ACCELERATOR CENTER,
MENLO PARK, SAN MATEO COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, finds that:

1. U. S. Department of Energy, San Francisco operations office, submitted a report of waste discharge (NPDES Short Form C) dated June 16, 1978, for discharge of wastewater from Stanford Linear Accelerator Center (SLAC), located approximately two miles west of the Stanford Campus in San Mateo County.

2. SLAC is a large research laboratory devoted to theoretical and experimental research in high energy physics and to the development of new techniques in high energy accelerator particle detectors. The main tool of the laboratory is a 2 mile long linear accelerator. This accelerator produces beams of electrons with energies up to 22 billion electron volts (22 GeV). It can also accelerate positrons, the "antiparticles" of the electrons, up to 15 GeV. The work is carried out under the sponsorship and financial support of the Department of Energy.

3. The discharge presently discharges cooling tower blowdown water from four separate closed-loop cooling systems, and, in addition, some runoff rainwater containing pollutants into three natural drainage ditches, which merge into San Francisquito Creek, a tributary to Searsville Lake, both waters of the United States. The following wastes containing pollutants are discharged into San Francisquito Creek:

   a. Waste No. 001 consists of an annual average of 5,700 gallons per day of blowdown water from the West Cooling Tower, located adjacent to the accelerator. The tower provides cooling for accelerator equipment, and the first accelerator mile. Wastewater is intermittently discharged via an open drainage ditch to the San Francisquito Creek at a point located approximately 2/3 of a mile east of the west end of the gallery.

b. Waste No. 002 consists of an annual average of 15,700 gallons per day of blowdown water from the East Cooling Tower, located adjacent to the accelerator. The tower provides cooling for accelerator equipment and the second accelerator mile. Waste water is intermittently discharged via an open drainage ditch to the San Francisquito Creek at a point located approximately 1 1/3 mile east of the west end of the gallery.

c. Waste No. 003 consists of an annual average of 11,800 gallons per day of a combined discharge of blowdown water from the tower located at the Beam Switchyard and Research Area, providing cooling for research equipment, and a tower located at the Central Utility Building, providing cooling for laboratories and shops of the campers area. The combined effluent is discharged via an open concrete channel and drainage ditch to the San Francisquito Creek at a point where the creek intersects Alpine Road.

4. This project is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Water Code.

5. A Water Quality Control Plan for the San Francisco Bay Basin was adopted by the Board on April 8, 1975. The Basin Plan contains water quality objectives for San Francisquito Creek and Searsville Lake.

6. The beneficial uses of San Francisquito Creek and Searsville Lake are:

a. Recreation
b. Preservation and enhancement of fish, wildlife, and other aquatic resources or preserves
c. Domestic and agricultural water supply
d. Esthetic enjoyment

7. The discharge is presently governed by Waste Discharge Requirements, Permit No. CA0005541, issued by the Environmental Protection Agency.

8. The discharger and interested agencies and persons have been notified of the Board's intent to issue requirements for the existing discharge and have been provided with the opportunity for a public hearing and the opportunity to submit their written views and recommendations.

9. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder, and to the provisions of the Federal Water Pollution Control Act, as amended, and regulations and guidelines adopted thereunder, that the discharger shall comply with the following:

A. Prohibitions

1. Chemicals used in any of the cooling towers for the purposes of algae control and/or corrosion inhibition shall not contain phosphate and/or zinc constituents.

2. The discharge of any radiological, chemical, or biological warfare agent or radiological waste is prohibited.

B. Effluent Limitations

1. The discharge of Wastes 001, 002, and 003 containing constituents in excess of the following limits is prohibited:

Constituents	Units	30-day Average	Maximum Daily	Instantaneous Maximum
Oil and Grease	mg/l	5	10	
Settleable Matter	ml/l/hr	0.1	0.2	
Chlorine Residual				0.0

2. The discharge of oil and grease resulting from Wastes 001, 002, and 003, shall not, totally, exceed 1.4 lbs/day (0.63 kg/day) as a 30-day average value and 2.8 lbs/day (1.2 kg/day) as a maximum daily value.

3. The pH of Wastes 001, 002, and 003 shall not exceed 8.5 or be less than 6.5.

4. Wastes 001, 002, and 003 shall meet the following limits of toxicity:

> The survival of a test organism acceptable to this Regional Board in 96-hour bioassays of the effluent as discharged shall achieve a median of 90% survival for three consecutive samples and a 90 percentile value of not less than 70% survival for 10 consecutive samples.

C. Receiving Water Limitations

1. The discharge of waste shall not cause the following conditions to exist in waters of the State at any place.

   a. Floating, suspended, or deposited macroscopic particulate matter or foam;

   b. Bottom deposits or aquatic growths;

   c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

d. Visible, floating, suspended or deposited oil or other products of petroleum origin;

e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:

a.	Dissolved oxygen	7.0 mg/l minimum. Annual median - 80% saturation. When natural factors cause lesser concentration(s) than those specified above, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.

D. Provisions

1. Neither the treatment nor the discharge of wastes shall create a nuisance or pollution as defined in the California Water Code.

2. The requirements prescribed by this Order supersede the requirements prescribed in Permit No. CA005541 issued by the Environmental Protection Agency.

3. The discharger shall comply with all prohibitions, effluent and receiving water limitations, and provisions of this Order immediately upon adoption.

4. The discharger shall comply with the attached Self-Monitoring Program as ordered by the Executive Officer.

5. The discharger shall comply with all items of the attached "Standard Provisions".

6. This Order expires September 1, 1983. The discharger must file a report of waste discharge in accordance with Title 23, Chapter 3, Subchapter 9, of the California Administrative Code not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

7. This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Water Pollution Control Act or amendments thereto, and shall become effective 10 days after date of its adoption provided the Regional Administrator, Environmental Protection Agency, has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 19, 1978.

FRED H. DIERKER
Executive Officer

Attachments:
Standard Provisions for Minor Discharges
Self-Monitoring Program

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SEPTEMBER, 1978

STANDARD PROVISIONS FOR MINOR DISCHARGES

1. The discharger shall permit the Regional Board:

   (a) Entry upon premises in which an effluent source is located or in which any required records are kept;

   (b) Access at reasonable times to copy any records required to be kept under terms and conditions of this Order;

   (c) Inspection at reasonable times of monitoring equipment or records, and

   (d) Sampling at reasonable times of any discharge.

2. All discharges authorized by this Order shall be consistent with the terms and conditions of this Order. The discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by this Order shall constitute a violation of the terms and conditions of this Order.

3. The discharger shall maintain in good working order and operate as efficiently as possible any facility or control system installed by the discharger to achieve compliance with the waste discharge requirements.

4. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

   (a) Violation of any term or condition contained in this Order;

   (b) Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;

   (c) A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Water Pollution Control Act, or amendments thereto, for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more strigent than any limitation upon such pollutant in this Order, the Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition and so notify the discharger.

6. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the discharger, the discharger shall notify the succeeding owner or operator of the existence of this Order by a letter, a copy of which shall be forwarded to the Board.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM
FOR

Stanford Linear Accelerator Center

U. S. Department of Energy

Menlo Park, San Mateo County

NPDES NO. CA 0028398

ORDER NO. 78-73

CONSISTS OF

PART A

AND

PART B

PART B

I. DESCRIPTION OF SAMPLING STATIONS AND SCHEDULE OF SAMPLING, ANALYSES, AND OBSERVATIONS

Analyses, observations, and examinations shall be performed according to the specifications shown in Table I.

A. EFFLUENT

Station	Description
E-001	At any point in the drainage ditch between the point of discharge into San Francisquito Creek and the point at which all waste tributary from the West Cooling Tower is present.
E-002	At any point in the drainage ditch between the point of discharge into San Francisquito Creek and the point at which all waste tributary from the East Cooling Tower is present.
E-003	At any point in the open concrete channel or drainage ditch between the point of discharge into San Francisquito Creek and the point at which all wastes tributary from the cooling towers located at the Central Utility Building and the Beam Switchyard and Research Area are present.

I, Fred H. Dierker, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 78-73.

2. Does not incude the following paragraphs of Part A:

   C.3., C.4., C.5.a., C.5.c., C.5.d., C.5.e., D.1., D.3., D.4., E.2., E.4., F.2., F.3.g.

3. Has been ordered by the Executive Officer on September 19, 1978 and becomes effective immediately.

4. May be reviewed at any time subsequent to the effective date upon written notice from either the Executive Officer or the discharger, and will be revised upon written agreement of the Executive Officer and the discharger.

FRED H. DIERKER
Executive Officer

Attachment:

Table I

TABLE I

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSES
SELF-MONITORING PROGRAM - NPDES # CA0028398
ORDER # 78-73

SAMPLING STATIONS	E-001, E-002, and E-003								
TYPE OF SAMPLES	O	C-24	G						
Flow rate (gallons/day)		M							
Settleable Matter (ml/l/hr)			M						
Oil & Grease (mg/l and lbs/day)			M						
pH (units)			M						
Temperature (^{O}F)			M						
Toxicity (% survival)		Y							
All Applicable Standard Observations	M								

LEGEND FOR TABLE

Type of Sample

G = grab sample
C = composite sample - 24-hour
O = observation

Frequency of Sampling

M = once each month
Y = once each year